ORIGINAL

DIVISION OF CONSUMER ADVOCACY
Department of Commerce and
Consumer Affairs
335 Merchant Street, Room 326
Honolulu, Hawaii 96813
Telephone: (808) 586-2800

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF HAWAII

In the Matter of the Application of	)	
	)	
PUBLIC UTILITIES COMMISSION	)	DOCKET NO. 03-0371
	)	
Instituting a Proceeding to Investigate	)	
Distributed Generation in Hawaii	)	

DIVISION OF CONSUMER ADVOCACY'S
REBUTTAL TESTIMONY AND EXHIBITS

Pursuant to the agreed upon schedule set forth in Prehearing Order No. 20922, the Consumer Advocate submits its **REBUTTAL TESTIMONY AND EXHIBITS** in the above docketed matter.

DATED: Honolulu, Hawaii, October 22, 2004.

Respectfully submitted,

By _____
JOHN E. COLE
Executive Director

DIVISION OF CONSUMER ADVOCACY

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing **DIVISION OF CONSUMER ADVOCACY'S REBUTTAL TESTIMONY AND EXHIBITS** was duly served upon the following parties, by personal service, hand delivery, and/or U.S. mail, postage prepaid, and properly addressed pursuant to HAR § 6-61-21(d).

THOMAS W. WILLIAMS, JR. ESQ. — 1 copy
PETER Y. KIKUTA, ESQ.
Goodsill, Anderson, Quinn & Stifel
Alii Place, Suite 1800
1099 Alakea Street
Honolulu, Hawaii 96813

WILLIAM A. BONNET — 1 copy
Vice President
Hawaiian Electric Company, Inc.
Hawaii Electric Light Company, Inc.
Maui Electric Company, Limited
P. O. Box 2750
Honolulu, Hawaii 96840-0001

PATSY H. NANBU — 1 copy
Hawaiian Electric Company, Inc.
P. O. Box 2750
Honolulu, Hawaii 96840-0001

ALAN M. OSHIMA, ESQ. — 2 copies
KENT D. MORIHARA, ESQ.
841 Bishop Street, Suite 400
Honolulu, Hawaii 96813

ALTON MIYAMOTO — 1 copy
President & CEO
Kauai Island Utility Cooperative
4463 Pahe'e Street
Lihue, Hawaii 96766

BRIAN T. MOTO, CORPORATION COUNSEL — 1 copy
County of Maui
Department of the Corporation Counsel
200 S. High Street
Wailuku, HI 96793

CINDY Y. YOUNG, DEPUTY CORPORATION COUNSEL — 1 copy
County of Maui
Department of the Corporation Counsel
200 S. High Street
Wailuku, HI 96793

KALVIN K. KOBAYASHI, ENERGY COORDINATOR — 1 copy
County of Maui
Department of Management
200 S. High Street
Wailuku, HI 96793

WARREN S. BOLLMEIER II, PRESIDENT — 1 copy
Hawaii Renewable Energy Alliance
46-040 Konane Place, #3816
Kaneohe, Hawaii 96744

JOHN CROUCH — 1 copy
Box 38-4276
Waikoloa, HI 96738

RICK REED — 1 copy
Inter Island Solar Supply
761 Ahua Street
Honolulu, HI 96819

HENRY CURTIS — 3 copies
Life of the Land
76 North King Street, Suite 203
Honolulu, HI 96817

SANDRA –ANN Y. H. WONG, ESQ. — 1 copy
1050 Bishop Street, #514
Honolulu, Hawaii 96813

CHRISTOPHER S. COLMAN — 1 copy
Deputy General Counsel
Amerada Hess Corporation
One Hess Plaza
Woodbridge, N.J. 07095

MICHAEL DE'MARSI — 1 copy
Hess Microgen
4101 Halburton Road
Raleigh, NC 27614

LANI D. H. NAKAZAWA, ESQ. — 2 copies
Office of the County Attorney
County of Kauai
4444 Rice Street, Suite 220
Lihue, HI 96766

GLENN SATO, ENERGY COORDINATOR — 1 copy
c/o Office of the County Attorney
County of Kauai
4444 Rice Street, Suite 220
Lihue, HI 96766

DATED: Honolulu, Hawaii, October 22, 2004.

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CA-RT-1
DOCKET NO. 03-0371

REBUTTAL TESTIMONY AND EXHIBITS

OF

JOSEPH A. HERZ, P.E.

On Behalf of

THE DIVISION OF CONSUMER ADVOCACY

SUBJECT: ANALYSIS OF, AND RECOMMENDATIONS ON THE COST-EFFECTIVE DEPLOYMENT OF DISTRIBUTED GENERATION IN THE STATE OF HAWAII

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REBUTTAL TESTIMONY OF JOSEPH A. HERZ, P.E.

Q. PLEASE STATE YOUR NAME.

A. My name is Joseph A. Herz.

Q. ARE YOU THE SAME JOSEPH A. HERZ THAT HAS PREVIOUSLY FILED DIRECT TESTIMONY IN THIS PROCEEDING.

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to:

1. provide a summary overview of my understanding of the positions of Parties that filed direct testimony in this proceeding (Section I);
2. clarify the purpose of this proceeding and the types of distributed generation ("DG") to be considered based on Order Nos. 20582 and 20832 filed on October 21, 2003 and March 3, 2004, respectively (Section II);
3. address the critical issues that need to be decided by the Commission (Section III); and
4. provide the Consumer Advocate's position on each of the issues set by the Commission for this proceeding and the areas where there is agreement among the Consumer Advocate and other Parties (Section IV).

The Parties that filed direct testimony in this proceeding are Hawaiian Electric Company, Inc. ("HECO") (for ease of reference, HECO, Hawaii Electric Light Company, Inc. ("HELCO") and Maui Electric Company, Ltd. ("MECO") are often collectively referred to as "HECO" in its direct testimony and in my rebuttal testimony), Kauai Island Utility Cooperative ("KIUC"), Hess Microgen ("HESS"), Hawaii Renewable Energy Alliance ("HREA"), Life of the Land ("LOL"), County of Maui ("COM"), and County of Kauai ("COK"). In my rebuttal testimony, HECO and KIUC are often referred to collectively as the "Utilities" or "Hawaii's Utilities"; and HESS, HREA, LOL, COM and COK are often referred to collectively as the "Non-Utility Parties."

Q. ARE YOU SPONSORING ANY EXHIBITS WITH YOUR REBUTTAL TESTIMONY?

A. Yes, I am sponsoring Exhibits CA-RT-100 and CA-RT-101 with my rebuttal testimony. Exhibit CA-RT-100 is a matrix that sets forth the Consumer Advocate's position on each of the issues set by the Commission for this proceeding and the areas where there is agreement between the Consumer Advocate and another party. I will be making frequent references to Exhibit CA-RT-100, also referred to as the DG Matrix, throughout my rebuttal testimony to describe and clarify various points and matters relating to the twelve issues set forth in Prehearing Order No. 20922 filed in the instant proceeding. Exhibit CA-RT-101 identifies the utility services provided to

customers under various customer-sited DG scenarios which will be discussed in my rebuttal testimony.

Q. WERE THESE EXHIBITS PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?

A. Yes they were.

I. SUMMARY OVERVIEW.

Q. PLEASE PROVIDE A SUMMARY OVERVIEW OF THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE POSITIONS OF THE PARTIES IN THIS PROCEEDING.

A. Based on a reading of the direct testimonies filed by the Parties in this proceeding, it is the Consumer Advocate's understanding that all Parties agree DG should be implemented in Hawaii. The Parties disagree, however, on the specifics of each issue to be addressed. My rebuttal testimony will address these differences, state the Consumer Advocate's recommendation, and explain why the Consumer Advocate's recommendation is reasonable and should be adopted by the Commission.

In addition, it appears the Parties do not share an understanding of the purpose of the instant proceeding and the types of DG to be considered, as will be discussed in Section II below. It is important to clarify the purpose of

the proceeding and the types of DG to be considered to resolve some of the differences regarding the recommendations of certain Parties.

Q. BEFORE SUMMARIZING THE CONCERNS RAISED BY THE PARTIES IN THEIR DIRECT TESTIMONIES, PLEASE DESCRIBE THE CRITICAL ISSUES THAT NEED TO BE DECIDED BY THE COMMISSION.

A. Ownership (i.e., whether or not the Utilities should be allowed to own customer-sited DG) is the number one issue that requires a decision by the Commission. This issue, which is Item 2) of the DG Matrix (Exhibit CA-RT-100), is discussed in detail in Section III.A. of my rebuttal testimony. The other issues that arise from the ownership issue pertain to the Parties' concerns regarding the development of a "level playing field" if the Utilities are allowed to own customer-sited DG, the loss of utility revenue, and the impact on the Utilities' systems if the customer-sited DG is installed. The discussion to address these concerns will be in the following sections of my rebuttal testimony:

1. the need to develop cost of service information and tariffs that would effectively unbundle the existing rates (i.e., rate design) (see Section III.B. and DG Matrix Item 10));
2. the inclusion of DG in the Utilities' IRP process (see Section III.C. and DG Matrix Item 11));

3. the need to consider a competitive process for installing cost-effective utility DG projects identified in the Utilities' IRP (see Section III.D. and DG Matrix addressed in parts of Items 3) 4) and 6);

4. the importance of developing interconnection requirements and standards for customer-sited DG (see Section III.E. and DG Matrix Item 9)); and

5. the need to develop rules and reporting requirements to ensure that costs of providing utility customer-sited DG are not being subsidized by the Utilities' non-DG customers (see Section III.F.).

In summary, the critical issues and the DG assumptions to be decided by the Commission stem from Non-Utility Parties' concerns related to establishing a level playing field and the revenue/reliability/cost concerns of the Utilities.

II. PURPOSE OF THE PROCEEDING AND THE TYPES OF DG TO BE CONSIDERED.

Q. PLEASE IDENTIFY THE POINTS THAT SHOULD BE CLARIFIED BASED ON THE CONSUMER ADVOCATE'S ASSESSMENT OF THE RECOMMENDATIONS OFFERED BY THE OTHER PARTIES TO THE INSTANT PROCEEDING.

A. Based on a reading of the direct testimonies filed by the Parties to this proceeding, it appears that the Commission should clarify the: (1) purpose of this proceeding; and (2) types of DG to be considered in order to resolve the

differences among the Parties on each issue and sub-issue presented in Exhibit CA-RT-100. The basis for the Consumer Advocate's observation is discussed below.

A. THIS PROCEEDING IS TO ESTABLISH THE POLICY AND FRAMEWORK FOR THE DEPLOYMENT OF COST-EFFECTIVE DG IN HAWAII.

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE PURPOSE OF THIS PROCEEDING?

A. Commission Order No. 20582 filed on October 21, 2003, in the instant proceeding states that the objective of this proceeding is to:

> . . . develop policies and a framework for distributed generation projects deployed in Hawaii. . . The polices and framework developed in this docket will form the basis of rules and regulations deemed necessary to govern participation in Hawaii's electricity market through distributed generation.[1]

Thus, this is clearly a policy setting proceeding to establish a framework for the implementation of DG in Hawaii. The framework should provide guidelines on each issue based on the Commission's consideration of the Parties' positions on the issues to be addressed in this proceeding. The guidelines may also require amending or adopting State administrative rules, as well as utility rules and practices to facilitate the deployment of DG consistent with the policies established by the Commission. These policies should, however,

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[1] See Section II—Purpose of Investigation, pages 1 and 2 of Order No. 20582.

remain fairly general to allow determination of key implementation issues on a case by case basis.

Q. BASED ON THE ABOVE, WHY DOES THE CONSUMER ADVOCATE CONTEND THAT THE PURPOSE OF THE PROCEEDING MUST BE CLARIFIED?

A. Some Parties appear to be making specific recommendations for the Commission's consideration, as opposed to focusing on the general guidelines that must be considered to address each issue identified by the Commission. For example, a number of specific rates and rate structures have been proposed by some Parties in their direct testimonies or in responses to informational requests (see for example Item 10)(B)2. of the DG Matrix), as opposed to focusing the discussion on the objectives of a proper rate design if DG is to be effectively deployed in Hawaii. Another example is a proposal to authorize the deployment of a specific type of DG (see for example Item 3)(A)2. of the DG Matrix, HECO's proposed CHP program), although that proposal is the subject of another docket (i.e., Docket No. 03-0166), which the Commission has not consolidated into the instant proceeding. Therefore, as noted in the DG Matrix, the Consumer Advocate has no position on such specific proposals at this time since such proposals are outside the scope of this proceeding and would be addressed on a case-by-case basis in future proceedings.

To the extent that such specificity was provided to illustrate a party's point or position, or for purposes of providing an example as to how a party's position might be implemented, such specific proposals and suggestions have been very helpful. It appears, however, that some Parties may be advocating specific rates and rate design to be implemented in this policy setting proceeding without other Parties having the opportunity to explore the facts and information necessary to analyze and test such proposals using company specific data. As indicated in my direct testimony, the actual implementation of DG policies resulting from this proceeding, especially cost allocation and rate design for purposes of developing specific rates, should be addressed in separate proceedings on a case by case basis for each utility.

Q. WHAT DO YOU MEAN BY POLICIES AND OBJECTIVES?

A. An objective represents a direction, action, end result or purpose to be achieved. A policy is a definite course or method of action or procedure to accomplish the objective. Furthermore, I would define "rule" to mean a method or usual way of implementing a policy.

Q. WHAT OBJECTIVES AND POLICIES IS THE CONSUMER ADVOCATE RECOMMENDING TO ENSURE THE COST-EFFECTIVE DEPLOYMENT OF SMALL SCALE DG IN HAWAII?

A. As discussed in my direct testimony and in Section III. below, the Consumer Advocate recommends that:

1. the current rate structures of each of the electric utility companies be unbundled and that rate tariffs should be modified to reflect the unbundled rates (see Section III.B. below);
2. Utility-owned DG be incorporated into the development of the Utility's IRP to ensure that the IRP action plan is reflective of the lowest reasonable cost option (see Section III.C. below);
3. a competitive procurement process should be considered to execute the IRP action plan's identified need for DG resources (see Section III.D. below;
4. interconnection standards and agreements that are applicable to DG facilities, be developed, if not already available (see Section III.E. below); and
5. rules and reporting requirements to prevent cross-subsidization of utility-owned DG by the Utilities' non-DG customer be developed (See Section III.F. below).

B. THE TYPES OF DG TO BE CONSIDERED IN THIS PROCEEDING ARE SMALL SCALE SUPPLY-SIDE RESOURCES.

Q. WHY IS IT IMPORTANT TO CLARIFY WHAT IS MEANT BY "SMALL SCALE ELECTRIC GENERATING TECHNOLOGIES" FOR PURPOSES OF THIS PROCEEDING?

A. Defining what is meant by "small" is necessary for the Commission to determine policy related to concerns with interconnection and the impact of DG connected to the Utilities' electric system. An assessment of "small" in the context of Issue "1" will affect the conclusions reached on Issues "4"-"8" of Prehearing Order No. 20922.

Q. HOW SHOULD THE COMMISSION DETERMINE WHAT IS TO BE CONSIDERED "SMALL" FOR PURPOSES OF THIS PROCEEDING?

A. Because of the diverse nature of each island system, the definition of the term "small" needs to convey that the term is relative to the size of each electric utility system. A suggested example of a policy setting definition of "small" is provided on page 1 of Exhibit CA-RT-100 (see Item 1)(A)2. of the DG Matrix). This exhibit also provides examples of what could be considered the upper size limit of generation (in MW) to be considered DG for purposes of this proceeding as follows.

IslandSystem	DG Size(MW)
Hawaii	1-2
Oahu	6-12
Maui	1-2
Lanai	up to 1
Molokai	up to 1
Kauai	1-2

It should be noted that although these thresholds may change over time as the utility's system loads, the loads of large customers and the location of such loads on the utility's grid change, the definition should not change.

Q. WHY IS IT IMPORTANT TO LIMIT THE POLICIES IN THIS PROCEEDING TO SMALL ELECTRIC GENERATION?

A. Limiting the Commission's DG policies resulting from this proceeding to "small" electric generating facilities is important because the policy guidelines and direction can focus on projects within a framework that would not be applicable in all instances to customer-sited DG generation. For example, a potential customer-sited generating facility serving the hotels on Lanai would not be considered "small" on the island of Lanai.[2] Therefore, this facility would fall outside the DG policy guidelines and direction resulting from this proceeding. In other words, limiting DG policies to "small" electric generating facilities, where "small" is relative to the size of each distinct island system,

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[2] See application filed in Docket No. 03-0261.

may prevent the DG policies established in the instant proceeding from automatically applying to unintended situations such as Lanai, where a single DG installation would have significant impact on the electric utility and its rate payers. Trying to develop policies for all sized DG in the instant proceeding would be impractical and could delay the development of small-scale DG markets in Hawaii.

C. THIS PROCEEDING IS FOCUSED ON SUPPLY-SIDE RESOURCES THAT CAN BE MET THROUGH THE DEPLOYMENT OF COST-EFFECTIVE DG.

Q. WHY DOES THE CONSUMER ADVOCATE CONTEND THAT THIS PROCEEDING IS FOCUSED ON SUPPLY-SIDE RESOURCES?

A. Commission Order No. 20582, Section I, page 1 stated that "distributed generation involves the use of small scale electric generating technologies." The Order went on to discuss distributed energy resources or distributed resources, which, in the broadest sense encompassed demand-side management technologies. The Order then stated, in paragraph 2 of Section I, that the focus of this "investigative docket is, however, on distributed generation." Thus, the Commission's intent to focus on supply-side resources is clear.

Q. WHY IS IT NECESSARY TO CLARIFY THIS POINT IN LIGHT OF THE COMMISSION'S DISCUSSION IN ORDER NO. 20582?

A. Some of the Parties, such as LOL, appear to have included DSM as DG for consideration in this proceeding. While DSM may fulfill the same role as electric generating DG facilities, such considerations are clearly outside the scope of this proceeding (see Item 1)(A)2. of the DG Matrix).

Q. ARE THERE ANY OTHER ASSUMPTIONS THAT NEED TO BE CLARIFIED?

A. Yes. If a customer is served by a generating unit and is not connected to the utility grid, the electric utility will not provide energy to, nor receive energy from, the customer. Customer-sited generating units in this situation would not be considered DG for purposes of this proceeding since there would be no need to consider the impact of such facility on the Utilities' electric distribution system. Only DG that is directly connected to the electric utility system or customer-sited DG serving customers connected to the electric utility system is addressed in my testimony since this situation may have a significant impact on the electric utility's distribution system (see Item 1)(A)3.(a) of the DG Matrix).

In addition, an emergency/standby generator, by my definition, is generation that is only used during the period when the electric utility service to the customer is temporarily interrupted. By this definition, emergency or standby generation does not operate nor produce energy to serve the

customer's load on a continuous basis. Rather, emergency or standby generation only serves the customer's load during periods when the generator is tested or when the utility system is not capable of serving the customer. Thus, I have assumed the emergency/standby generator will not be considered as a DG unit for purposes of this proceeding (see Item 1)(A)3.(b) of the DG Matrix).

III. CRITICAL ISSUES.

A. WHO SHOULD OWN AND OPERATE DG FACILITIES.

Q. WHAT ARE THE OWNERSHIP ISSUES THAT MUST BE ADDRESSED IN THIS PROCEEDING?

A. The DG Matrix provided as Exhibit CA-RT-100 provides a breakout of the DG ownership question between utility-sited DG (i.e., inside the Utility's substation fence—Item 2)(A)1) and customer-sited DG (Item 2)(A)2). From my reading of the direct testimonies, the Parties do not appear to have a concern over Utility ownership of utility-sited DG. The concerns of the Parties appear to be focused on Utility ownership of customer-sited DG.

1. DG sited on utility property "inside the fence" should only be owned by Utilities.

Q. WHAT IS UTILITY-SITED DG?

A. Utility-sited DG would be generation that is located on utility property, inside the secured area of the generating facility, to meet a specific need such as transmission and distribution ("T&D") constraints, or specific loads. An example of utility-sited DG would be MECO's Hana generators that were installed at a sub-station to address case specific delivery system constraints during periods when MECO performed maintenance on the transmission line serving the Hana community.[3] Another example would be HELCO's installation of 1MW diesel generators disbursed at sub-station sites throughout HELCO's system to provide needed peaking capacity while new central station capacity was being constructed.[4]

Q. WHY SHOULD THE COMMISSION RESTRICT OWNERSHIP OF UTILITY-SITED DG TO THE UTILITIES?

A. For safety and security reasons Utility-sited DG installed inside the Utility's sub-station fence should only be owned and operated by the Utility and not by third-party vendors as noted on Item (2)(A)1. of the DG Matrix. In light of the

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3 See application filed in Docket No. 99-0369 and approved in Decision and Order No. 17957, filed on August 8, 2000.

4 See HECO, T-1, page 13.

events of September 11, 2001, and the concerns with homeland security, it is imperative that access to generation located within the fenced boundaries of utility generating stations be restricted to authorized personnel employed or retained by the Utilities. This restriction is necessary to protect the Utilities' generating facilities, support the Utilities' safety and security measures, and to ensure the provision of reliable service by the Utilities.

2. Hawaii's Utilities, customers and third-party vendors should be allowed to own and operate dg facilities that are located on customer premises.

Q. WHAT IS CUSTOMER-SITED DG?

A. Customer-sited DG is simply generation located on the customer's premise that generally serves the customer's load. While the output of the customer-sited DG may physically serve the customer's load, with any excess DG output feeding the utility grid, the output of utility-owned DG could be recognized together with all of the utility's generating resources as serving all electric system load (see Item 1)(A)4. of the DG Matrix). The generation is located on the customer's side of the electric meter such that the energy provided by the DG is not measured by the meter at the point of the customer's connection to the utility grid (see CA-102, page 4 for an illustrative example). An example of customer-sited DG would be a co-generation facility installed at the customer's site that produces electricity and process steam to serve the customer's thermal energy requirements.

Q. WHAT IS THE CONSUMER ADVOCATE'S POSITION ON WHO SHOULD OWN AND OPERATE DG FACILITIES THAT ARE LOCATED AT A CUSTOMER'S PREMISE?

A. The Consumer Advocate recommends that there be no restriction on who may own and operate customer-sited DG projects. Thus, customer-sited DG can be owned, operated and maintained by a customer, the utility company or a third-party vendor (see Item 2)(A)2.(b) of the DG Matrix).

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE OTHER PARTIES' POSITION ON THIS MATTER?

A. The direct testimonies of each of the Parties on this issue can be summarized as follows.

- HECO indicates that customer-sited DG could be owned by customers or third-party vendors/equipment lessors or by Utilities. HECO also directs a significant portion of its testimony to its proposed CHP program (see HECO-T-1, pages 12-21 and HECO-T-4 pages 15-17).
- KIUC's position is that Utilities should be allowed to own customer-sited DG facilities (see KIUC-T-1, page 12 and KIUC-T-2, pages 20-23, pages 32-33).
- HESS indicates that customer-sited DG projects should be owned and operated by both Utilities and private companies to provide customers with the most options.

- HREA recommends that the Utility be limited to facilitating the implementation of DG (see HREA-T-1, pages 11-13).
- COM believes that Utilities should not own or operate customer-sited DG facilities and that the Commission should specify a minimum three-year moratorium preventing the Utilities from participating in customer-sited DG projects (see COM-T-1, page 19 and COM-T-2, page 98)
- COK's direct testimony does not address this issue specifically but discusses the importance of creating a level playing field if Utilities are to participate in the customer-sited DG market (see COK-T-1, page 5).
- LOL's direct testimony does not address this issue specifically but indicates that the Utilities' participation in the customer-sited DG market should be through a separate company or a separate company with "firewall" protections (see LOL Preliminary Statement of Position, pages 21-22).

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE PARTIES' CONCERNS UTILITY WITH OWNERSHIP OF CUSTOMER-SITED DG?

A. The Utilities appear to be concerned that Non-Utility owned and operated DG could result in a loss of revenues which would impair the Utilities' ability to earn a fair return on investment, thereby potentially increasing rates for

non-DG customers to recover the loss of revenues. In addition, the Utilities appear to be concerned that customer-sited DG whose operations and maintenance are not controlled by the Utilities could adversely impact the Utilities' electric system reliability.

The Non-Utility Parties in this proceeding appeared to be concerned with the Commission's ability to create a "level playing field" to adequately protect the Non-Utility DG participants from utility actions that in essence discourage DG participation by others.

a. Utilities' concerns with the adverse impacts of the loss of revenue from customer-sited DG are valid and can be addressed.

Q. WHAT IS YOUR UNDERSTANDING OF THE BASIS FOR THE UTILITIES' CONCERNS REGARDING THE LOSS OF REVENUE AND THE ADVERSE IMPACT ON COSTS AND OPERATIONS FROM NON-UTILITY OWNED AND OPERATED CUSTOMER-SITED DG?

A. The Utilities are concerned that the installation of Non-Utility owned customer-sited DG will result in a loss of revenue designated to cover the Utilities' fixed O&M expenses. The Utilities are also concerned that because Non-Utility DG participants would not be subject to regulatory oversight regarding their operation and maintenance of DG facilities, the Utilities' system reliability and system costs could be adversely impacted when compared to customer-sited DG that is directly owned and controlled by the Utilities. To

address this concern, the Commission should adopt the Consumer Advocate's cost of service/tariff and interconnection recommendations discussed in Sections III.B and III.E below. In addition, the Commission should allow Utility participation in the customer-sited DG market for the reasons discussed later. The Utilities' participation, however, should be limited to those DG projects determined to be implemented from the Utilities' IRP plan and the participation should be in a manner that is not unduly or unreasonably preferential, discriminatory or anti-competitive as noted in Item 2)(B)1. of the DG Matrix.

Q. PLEASE EXPLAIN KIUC'S COMMENT REGARDING ITS RIGHT OF FIRST REFUSAL FOR OWNERSHIP OF CUSTOMER-SITED DG NOTED ON ITEM 2)(A)2.(b) OF THE DG MATRIX.

A. As mentioned in my direct testimony, a customer of KIUC is in a different situation than a customer of an investor-owned utility (see CA-T-1, pages 71-72). Nearly all of KIUC's customers are members (i.e., owners) of the cooperative. Therefore, a customer of KIUC is not driven by the same economics as a customer of an investor-owned utility in determining whether to install customer-sited DG. In the case of an investor-owned utility, customers and owners (i.e., shareholders) of the Utility are two distinct groups. A customer of an investor-owned utility would approach and consider the economics and impact of installing DG from a different perspective than would the owners of the Utility. In the case of KIUC, the owner and customer are

one in the same and the decisions regarding DG should therefore be joint decisions between KIUC and its owners/customers. As noted in the DG Matrix at Item 12)(C)3., "[t]he process of demonstrating rate payer benefits should be standardized for each utility, taking into consideration, among other things, the ownership structure of the utility (cooperative vs. investor-owned)." (Emphasis added.) Therefore, the ability of KIUC to have the right of first refusal makes sense for KIUC and is acceptable to the Consumer Advocate.

b. Non-Utility Parties' concerns with the creation of a "level playing field" if Utilities are allowed to own, operate and maintain customer-sited DG can be addressed.

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE BASIS FOR THE LEVEL PLAYING FIELD CONCERN EXPRESSED IN THE NON-UTILITY PARTIES' DIRECT TESTIMONIES?

A. The Non-Utility Parties fear Hawaii's Utilities have a tremendous competitive advantage that could adversely affect the effective deployment of DG in Hawaii. In general, the Non-Utility Parties indicate that Hawaii's utilities have an advantage in the following three areas:

- They claim that Utilities have access to information regarding customer information and electric system operations that are not readily known or available to other potential DG participants.

- The concern that the Utilities, whether participating in the DG market either on its own as a regulated service or through unregulated affiliates, could shift costs to the utility customers and cross-subsidize their DG operations to their competitive advantage.
- The concern that Utilities could effectively discourage DG participation by others through:
  - onerous interconnection requirements and time delays, high DG stand-by charges and penalties, or
  - discounting the rates charged potential DG customers through customer retention contracts so as to prevent Non-Utility customer-sited DG from being installed.

Q. IF ALLOWED TO PROVIDE CUSTOMER-SITED DG SERVICE AS A REGULATED UTILITY SERVICE, WILL HAWAII'S ELECTRIC UTILITIES HAVE AN UNFAIR COMPETITIVE ADVANTAGE OVER THIRD-PARTY VENDORS?

A. No, for the following reasons. First, the recommendations discussed in Section III. my rebuttal testimony will ensure that the "level playing field" is created such that the Utilities do not have a competitive advantage.

Second, information about customer loads, and the potential to site DG at the customer premise can be obtained by third-party vendors directly from the customer in order to assess whether the customer can benefit from the

installation of DG at the customer's site. Thus, the utility does not have a competitive advantage in this regard.

Third, the electric utilities have access to the same equipment vendors as third parties and customers. Thus, the Utilities do not have a technology with regard to DG equipment.

Finally, as a regulated entity, Utilities cannot provide discounts or rebates to customers to encourage the customer to purchase DG services from the utility without prior Commission approval of such discounts. In comparison, unregulated third-party vendors do not need to obtain Commission approval to offer discounts or rebates to potential DG customers.

c. Utilities should be allowed to own, operate and maintain customer-sited DG.

Q. WHY DOES THE CONSUMER ADVOCATE RECOMMEND THAT UTILITIES BE ALLOWED TO OWN, OPERATE AND/OR MAINTAIN CUSTOMER-SITED DG?

A. The Consumer Advocate makes this recommendation because:

- Utilities' participation will provide customers with more options for the providers of DG to be installed on customer premises, thereby promoting a competitive market for DG;

- Utilities should be provided the opportunity to implement the lowest, reasonable cost plan to provide reliable service as established by that Utilities' IRP, which ultimately benefits all of the Utilities' customers.

Q. IF UTILITIES ARE ALLOWED TO PROVIDE CUSTOMER-SITED DG, SOME PARTIES CONTEND THAT THE SERVICE SHOULD BE OFFERED AS AN UNREGULATED SERVICE. DOES THE CONSUMER ADVOCATE SUPPORT THIS RECOMMENDATION?

A. No, the Consumer Advocate prefers the offering of Utility customer-sited DG as a regulated service. The Consumer Advocate does not recommend that such service offering be provided **solely** as an unregulated service, either by the utility or through a separate subsidiary.

Q. PLEASE EXPLAIN WHY.

A. It appears that some Parties are under the impression that the creation of a separate non-regulated subsidiary to provide utility owned and operated customer-sited DG will ensure the creation of a level playing field. At first blush, the Parties' recommendations may appear reasonable. Their expectations, however, will not be met if the utility provides the DG service with resources used to provide the existing regulated electric service **and** the proposed customer-sited DG service. In such a situation, the concerns with

the potential for cross-subsidization and the need to create a "level playing field" continue to exist.

Q. ARE THERE EXAMPLES OF WHERE THIS CONCERN EXISTS FOR UTILITIES OPERATING IN THE STATE OF HAWAII?

A. Yes, the concern exists whenever a utility provides service to a non-regulated entity using utility resources or when a utility receives service from a non-regulated entity. For example, The Gas Company uses the same resources to provide the regulated gas and non-regulated bottled gas service. The local incumbent telephone company uses the same resources to provide regulated and non-regulated services. Similarly, HECO uses the same resources to provide service to both the utility and Non-Utility operations of its parent, HEI. In all of the above situations, there are rules and reporting requirements that assist the regulatory agencies (i.e., the Commission and the Consumer Advocate) in determining whether cross-subsidization of the non-regulated operations by the regulated operations is occurring.

Q. WHAT WOULD BE A MEANS OF ENSURING THAT CROSS-SUBSIDIZATION OF THE CUSTOMER-SITED DG BY NON-DG UTILITY CUSTOMERS DOES NOT OCCUR?

A. Preventing the utility from being able to own, operate, and/or maintain customer-sited DG is one means, but this option has negative consequences.

Q. WHAT WOULD BE THE NEGATIVE CONSEQUENCE OF NOT ALLOWING UTILITIES TO PARTICIPATE IN THE CUSTOMER-SITED DG MARKET?

A. Preventing Utility participation in the customer-sited DG market will reduce the number of potential DG suppliers and impair the creation of a competitive DG market. In addition, not allowing the Utility to participate in the customer-sited DG market may adversely impact the Utilities' ability to provide reliable service at the lowest reasonable cost.

Q. WHY DOES THE CONSUMER ADVOCATE PREFER UTILITY PARTICIPATION IN THE CUSTOMER-SITED DG MARKET AS A REGULATED UTILITY SERVICE?

A. As a regulated utility service, the Utilities' involvement in the customer-sited DG market would focus on reliability in a manner consistent with central utility planning (i.e., the IRP process). This would contrast with an unregulated subsidiary's focus, which may be on cost and profit for specific customer-sited DG projects. If offered as an unregulated utility service, there would be no requirement to seek Commission approval for the installation of the DG unit at a customer's premise, or for the rates to be charged for the energy provided by DG facility, similar to the existing arrangement between customers and third-party vendors of DG facilities.

On the other hand, if the installation of customer-sited DG were offered as a utility service, the Commission would have an opportunity to review the

proposal and determine if such installation is a cost-effective means of meeting the Utilities' customers' energy needs. The reason is because the installation would first be identified in the development of the Utilities' IRP. The Commission could also require the Utility to seek Commission approval of the specific project through the filing of an application. Both of the above will provide interested parties an opportunity to address concerns with the specific proposals of the utility.

d. Summary of Consumer Advocate's position on the Parties' concerns with Customer-sited DG.

Q. WHAT IS THE CONSUMER ADVOCATE'S POSITION REGARDING THE CONCERNS RAISED BY THE PARTIES?

A. The Parties have legitimate concerns that should be carefully considered by the Commission for DG to be successfully implemented in Hawaii. The Consumer Advocate contends, however, that the recommendations listed below are an effective and necessary means for the Commission to address the Parties' concerns. To effectively deploy DG on each of the islands, the Commission should allow Utilities to own and operate customer-sited DG, consistent with the Utilities' IRP.

In addition, to address the Non-Utility Parties' concerns with the creation of a level playing field, the Commission's role (as set forth in

Item (3)(B) of the DG Matrix) should be to require each of the Utilities to do the following:

1. develop and have cost of service information and apply appropriate tariffs that result in a DG customer being served at a cost that is not subsidized by non-DG customers;
2. consider the deployment of customer-sited DG, to the extent possible,[5] in the development of each Utility's IRP action plan by evaluating the cost-effectiveness of DG resources through the identification of specific areas or types of areas where DG is needed or could be most beneficial;
3. consider a competitive procurement process for the implementation of each Utility-owned DG;
4. require each Utility to have Commission approved interconnection standards and agreements to qualify or approve DG facilities for interconnection with the Utilities' grid; (as noted in Item 9(B) of the DG Matrix); and

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5 The Utility may not be privy to a customer's decision to sited DG on the customer's premise until the Utility is informed of a need to execute an interconnection agreement, or until the Utility is informed that the customer will no longer need Utility service. Thus, it may not be possible, from a timing perspective, for the Utility to consider all customer-sited DG in developing the Utility's IRP.

5. develop rules and reporting requirements to prevent cross-subsidization of utility-owned customer-sited DG by non-DG utility customers, to the extent practical.

The following sections of my rebuttal testimony will discuss how each of the above addresses the Parties' concerns with Utility-owned customer-sited DG.

B. UNBUNDLING OF THE UTILITIES' CURRENT RATES IS NECESSARY TO ADDRESS UTILITIES' CONCERNS WITH THE LOSS OF REVENUE RESULTING FROM THE INSTALLATION OF CUSTOMER-SITED DG.

Q. PLEASE DESCRIBE THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE CUSTOMER-SITED DG RATE IMPACT CONCERNS OR PROPOSALS OF THE PARTIES.

A. HECO states that customer-sited DG raises issues involving cross-subsidization between rate classes and the recovery of a significant portion of the Utilities' fixed cost in the energy charges as major cost allocation and rate design issues that must be considered (see HECO-T-5, pages 11-16). HECO also indicates that its cost of service studies may be expanded, if and when the DG market develops significantly but that the benefits of doing so, however, should be balanced within the cost of developing and collecting the required data (see HECO-T-5, page 7). HECO indicates that revenue recovery and revenue stability are important, but that

rate unbundling is not necessary to deploy customer-sited DG (see HECO-T-5, pages 14-16).

KIUC indicates that it is premature to include specific rate provisions for cost allocation and rates at this time but that its "Rider S, Standby Charge" is intended to have DG customers pay for the services provided so as to not unfairly burden non-DG customers (see KIUC-T-2, pages 35-36).

HREA's direct testimony indicates that utility rate structures should be redesigned so as to encourage DG (see HREA's direct testimony, page 15).

COM has a number of specific cost allocation and rate design proposals (see COM-T-1, pages 11-14 for a summary of COM's cost allocation and rate design proposals). COM, in summary, is recommending specific cost allocation and rate designs that appear to be intended to encourage installation of customer-sited DG by Non-Utility Parties (see COM-T-2, pages 99-101). Many of COM's rate design proposals, however, have implications beyond DG considerations and could impact social policies such as Hawaii's Islands development and growth policies and objectives. In addition, COM recommends that the Commission open a generic rule making proceeding to address all of the rates and fee issues recommended by the Parties to this proceeding (see COM-T-1, page 14).

HESS indicates that a level playing field prevents standby charges or other fees from being applied to private company DG projects if the Utility does not assess such charge on its own DG customers. HESS also states

that the Utilities should not be allowed to provide special discounts to its DG customers to the disadvantage of other potential DG participants (see HESS-T-1, page 2).

COK is concerned that as large customers consider DG options, smaller customers will need the protection of a regulatory framework that mandates the Utility to consider measures to mitigate stranded investment and revenue loss due to DG (see COK-T-1, page 4).

LOL believes that tariffs should be established that are location and time-of-use specific (see LOL Preliminary Statement of Position, page 25).

Q. DOES THE CONSUMER ADVOCATE RECOMMEND THAT THE UTILITIES' EXISTING RATES BE UNBUNDLED?

A. Yes, the existing rates should be unbundled to address not only the Non-Utility Parties' concerns for a level playing field, but also the Utilities' loss of revenue concerns. In my direct testimony, I indicate that it is necessary for Utilities to unbundle rates so that DG customers and non-DG customers can be treated fairly (see CA-T-1, pages 58-64).

Q. WHY WOULD A CUSTOMER'S DECISION TO INSTALL DG AFFECT THE ELECTRIC RATES CHARGED TO THE UTILITY'S NON-DG CUSTOMERS?

A. Historically, the Utility provided all of the customers' electricity requirements. Thus, the metering system and rates were designed for that purpose and the

Utilities' existing electric rates are based on the assumption that the utility provides all of the customers' energy needs. These rates are intended to recover the fixed and variable costs of providing all of the customer's electricity needs and include recovery of a significant portion of the utility's fixed costs in the energy charges to customers. With the installation of customer-sited DG, the utility may no longer provide all of the customer's energy needs. The existing rates, however, were not designed to recover revenues for fixed costs currently incurred if energy sales are decreased due to installation of a customer-owned generating unit whose energy is not metered by the utility.

Q. WHAT WOULD HAPPEN IF EXISTING RATES WERE TO CONTINUE TO BE USED AND DG IS INSTALLED BY CUSTOMERS TO SERVE ALL OR A PART OF THE CUSTOMER'S LOAD, WITH THE UTILITY SERVING THE REMAINING LOAD?

A. Customer-sited DG would decrease the DG customer's use of metered energy (kWh) and the utility's revenues would be less from that customer than it planned to receive when the existing rates were established. The decreased revenue may eventually cause the electric utility to increase the rates charged to non-DG customers to recover the revenue shortfall from DG customers, to the extent the DG market becomes significant and that the revenue shortfall is not replaced with new revenue from load growth of new or existing non-DG customers. In addition, DG customers requiring utility standby or backup

service to produce the energy not generated by the customer-sited DG may not pay their fair share of costs incurred by the utility to provide the standby or backup service. The determination of the Utilities' cost of serving DG customers requires the development of an unbundled cost of service study. Likewise, existing Utility rate structures should change to recognize the difference in services provided to DG customers versus non-DG customers.

Q. HOW DOES THE CONSUMER ADVOCATE'S RECOMMENDATION REGARDING THE UNBUNDLING OF UTILITY RATES ADDRESS THE CONCERNS RAISED BY THE OTHER PARTIES TO THIS PROCEEDING?

A. Exhibit CA-RT-101 illustrates the different utility services provided to non-DG customers versus that provided to DG customers under various customer-sited DG scenarios. Exhibit CA-RT-101 is explained in greater detail later in my rebuttal testimony, but suffice it to say that the deployment of customer-sited DG in the state of Hawaii will result in DG customers and non-DG customers receiving different services from the utility.

With the unbundling of the Utilities' rates, each customer will pay the same rate for each of the services that it receives from the utility. In other words, non-DG customers and DG customers under various customer-sited DG situations will be treated the same for each of the services they receive from the utility.

By the same token, the unbundling of the Utilities' rates will result in the customer continuing to compensate the utility for the applicable services that the customer continues to receive from the utility (e.g., standby or backup service). Thus, the unbundling of utility rates addresses the Utilities' concerns regarding loss of revenues from customer-sited DG that may occur under the Utilities' currently bundled rates. The unbundling of rates also allows the Utilities to recognize the differences in the types (for example, as-available versus firm capacity) of customer-sited DG resources, and whether such DG facility is under the control of the utility.

Q. WHAT IS MEANT BY UNBUNDLING?

A. Unbundling refers to the process by which the supply and delivery services that the Utility provides can be separated into the components that are used by customers. For instance, in referring to Exhibit CA-RT-101, customers that receive all (i.e., full-requirements) services from the Utility utilize all of the Utility's supply services and delivery services. Therefore, if all of the Utility's customers are full-requirement customers, there is no need to unbundle the rates charged for the Utility's supply and delivery services because all customers are receiving all of the same services from the Utility.

With the deployment of DG and customers now being served by customer-sited DG facilities, not all customers receive the same supply and delivery services from the Utility. For example, referring to Exhibit CA-RT-101

Scenario 2 where a customer is served in part by a customer-sited DG facility, the supply services provided by the Utility change from full requirements to backup and supplemental services. The customer in Scenario 2 continues, however, to receive delivery services (T&D services, indirect services (e.g., accounting, A&G, etc.) and ancillary services) from the Utility.

In addition, the deployment of DG may result in the customer-sited DG facility providing services to the Utility as illustrated in Scenarios 3 and 4 of Exhibit CA-RT-101. In other words, the homogenous bundled services provided to all customers without DG, is different than the services provided by the Utility to, and possibly received from, customers with DG. In fact, the services provided by the Utility to, and received from, customers with DG can vary significantly as illustrated in the Exhibit CA-RT-101 DG customer scenarios.

Accordingly, it is recommended that the Commission require each Utility to develop cost of service information and apply tariffs that result in DG customers being served at a cost that is not subsidized by non-DG customers (see Item 3)(B)1. of the DG Matrix). The Consumer Advocate and the Utilities agree that rates should apply to DG facilities that recover the cost of services provided to DG customers and that deployment of utility-owned DG will not have an adverse impact on non-DG customer rates (see for example Item 3)(B)1. of the DG Matrix). The objective or end result of this recommendation is to unbundle the existing rates in a manner that results in

DG customers paying for utility services that are provided to them without increasing costs to non-DG customers. The policy that I recommend to the Commission is to direct the Utilities to develop and have cost of service information and apply appropriate tariff that result in a DG customer being served at a cost that is not subsidized by non-DG customers.

Q. WHAT MUST THE COMMISSION CONSIDER IN ORDER TO PROPERLY UNBUNDLE THE UTILITIES' EXISTING RATES SUCH THAT THE UNBUNDLED RATES WILL ADDRESS THE PARTIES' CONCERNS?

A. It will be necessary to identify the differences in the bundled services provided to non-DG customers versus the unbundled services provided to and received from DG customers. Once the unbundled services have been identified, the cost of service for each of the unbundled services should be quantified in a cost of service study for each Utility. The level of effort and detail for the cost of service study, however, should be balanced with the information available, the cost of developing additional data and the magnitude of the DG market and its impact on the Utilities' revenue recovery and revenue stability. These last two points are included in the DG Matrix (see Item 10)(A)).

Q. WHAT RESULT IS SOUGHT WITH THESE EFFORTS?

A. The purpose of such efforts is to develop and have the cost of service information available to properly analyze and develop appropriate tariffs that

result in DG customers compensating the Utility for the cost of services provided (see Item 10)(C) of the DG Matrix) and mitigate the potential for subsidization of DG customers by non-DG customers.

Q. WHAT MINIMUM UNBUNDLED COMPONENTS ARE NECESSARY TO RECOGNIZE THE SERVICES TO DG CUSTOMERS?

A. As shown in Exhibit CA-RT-101, I have identified and separated the services provided by the utility to the DG customer between supply (i.e., generation) and delivery services. For supply services from the Utility, at a minimum, one of the service components would be for the back-up services, or stand-by service, that the Utility provides from its generation to serve the customer load not served by the customer-sited DG facility. For delivery services, there are T&D services, indirect services (i.e., customer accounting, A&G, etc.) and ancillary services (i.e., regulation and frequency control, voltage support, etc.) that are provided by the Utility to the DG customer. The ancillary service unbundled components, however, are generally the most difficult to identify and quantify because of the lack of information that Hawaii's utilities have available at this time. Accordingly, the cost and rates associated with ancillary services will likely have to evolve over time as the Utilities have the opportunity to develop the information and as the customer-sited DG market develops on the Hawaii Utilities' electric systems. Therefore, the minimum initial unbundled

rate components for the services provided from the Utility to the DG customer would consist of:

- the generation stand-by charge;
- a T&D charge; and
- a charge for indirect services to cover customer accounting, A&G, etc.

Exhibit CA-RT-101 also shows that customer-sited DG can provide services to the Utility. Services that could be provided by the DG customer to the Utility, would be purchase energy, a capacity and dispatch control credit depending on the type of DG resource and its ability to serve Utility loads when needed by the Utility, and a locational credit that gives recognition for customer-sited DG facilities installed inside a Utility's load congested area with constrained T&D facilities (see Exhibit CA-RT-101).

Q. SHOULD THE COMMISSION REQUIRE THE UNBUNDLED RATES TO BE COST-BASED IN THE INSTANT PROCEEDING?

A. While the ultimate goal should be to have cost-based unbundled rate, such a goal may not be achievable or practical at this time. As previously indicated and set forth in the DG Matrix (see Item 10)(A)2.), the initial unbundling of rates should balance the effort and burden of doing so against the benefits derived therefrom. Accordingly, the process of unbundling to develop specific unbundled rates would need to be performed in a separate proceeding where

the specific data supporting each Utility's costs of service can be analyzed on a case by case basis.

Q. PLEASE SUMMARIZE THE DIFFERENCES IN SERVICES PROVIDED TO DG CUSTOMERS COMPARED TO NON-DG CUSTOMERS.

A. Exhibit CA-RT-101 is a tabulation that illustrates the differences in services provided to customers with and without DG under various customer-sited DG scenarios. The differences shown by Exhibit CA-RT-101 are that customers without DG receive all of their power supply and delivery services from the Utility. Customers served from customer-sited DG may, however, receive some part of their supply services from the Utility and also are dependent to differing degrees on the Utilities' delivery services depending upon the customer's flexibility to curtail its load when the customer-sited DG facility is not operating. Exhibit CA-RT-101 also indicates the differences in service that the customer-sited DG can provide to the Utility. Each of the services provided by the Utility to the customer has a cost associated with it. Likewise, each of the services received by the Utility from the customer-sited DG has different value to the Utility depending upon the services and location value.

Standby tariffs are an example of a specific form of an unbundled rate. Regardless of the method used to unbundle the existing rates, it is important to demonstrate that the method fairly compensates the Utility for the services provided to the DG customer. Ideally, rates would be unbundled and each

component of utility service would be identified and separately charged to all customers, both DG customers and non-DG customers. In this situation, it could be demonstrated that all customers are treated equally, as all customers would pay the same rate for each of the services that they receive from the company. The benefit of developing detailed unbundled rates, however, may not offset the cost of implementing such rates until the DG market further develops and more information is obtained. Therefore, the Commission's policy should set forth cost allocation and rate design guidelines in this proceeding that considers the need to balance the level of effort to unbundle rates with the cost and benefits of doing so.

Q. SHOULD RATE UNBUNDLING TO DEVELOP SPECIFIC UNBUNDLED RATES BE DONE IN THE INSTANT PROCEEDING, OR IN A GENERIC RULE MAKING PROCEEDING AS RECOMMENDED BY THE COM?

A. Neither. The objective of this proceeding is not to determine the specific unbundled rates. Each of the island systems is unique and any implementation of Commission policies regarding cost allocation and rate design with respect to DG should be geared specifically to the costs incurred by the utility to serve the customers of each island. Thus, it would not be reasonable to develop specific unbundled rates in a generic rulemaking proceeding as well.

As discussed in Section II. above, this is a policy setting proceeding whose purpose is to develop the framework for the effective deployment of small scale DG. Thus, the expected outcome should be a directive from the Commission to develop cost of service information that can be used to unbundle the existing rates and the guidelines for when the rates would be unbundled.

Q. WHEN SHOULD THE SPECIFIC UNBUNDLED RATES BE DETERMINED?

A. Implementation of such cost allocation and rate design policies should be done within the context of a proceeding in which the specific facts and information available to the parties can be presented and analyzed in order to determine the specific unbundled rates for each Utility. Of course, the Commission's policy decision in the instant proceeding, determining the need to develop unbundled rates and the cost allocation information that will be required once the rates are unbundled will provide the parties with the guidelines and direction as to how specific unbundled rates should be developed for each Utility.

C. THE DEPLOYMENT OF COST-EFFECTIVE CUSTOMER-SITED DG SHOULD BE CONSIDERED IN THE DEVELOPMENT OF THE UTILITIES' IRP, TO THE EXTENT POSSIBLE.

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE PARTIES' POSITION ON WHETHER DG SHOULD BE INCORPORATED IN THE IRP PROCESS?

A. HECO represents that no changes to the IRP framework are required for consideration of DG and that DG should be considered on a generic basis in the IRP process (see HECO-T-1, pages 36-37).

KIUC favors inclusion of DG in the IRP process (see KIUC-T-2, pages 29-30).

HREA states that the Utility could facilitate the implementation of DG in its IRP by identifying the amounts, timing, locations and any locational restrictions to all potential DG providers at the same time (see HREA's Direct Testimony, page 12).

COM states a level playing field for DG can be supported by including DG in the IRP process and that the IRP process needs to be revised to address competitive bidding for new supply resources. COM also recommends that the Commission open a rule making proceeding to conduct a review of the IRP process and to establish rules that address DG, DSM and competitive bidding (see COM-T-1, pages 14-15).

COK states that KIUC, as a cooperative, is different than the other investor-owned utilities and that the regulatory framework should recognize

this difference and that the KIUC IRP planning process should consider measures to mitigate stranded investment and revenue loss due to DG in its planning process (see COK-T-1, page 4).

LOL states that the IRP process requires an overhaul and should include benchmarks, plans, goals and measures along the way (see LOL's Preliminary Statement of Position, page 25).

Q. WHAT IS THE CONSUMER ADVOCATE'S RECOMMENDATION?

A. As indicated in my direct testimony, for DG to be effectively deployed, the Commission must require the incorporation of DG in the utility's IRP cycle and implementation plans (see Item 3)(B)2. of the DG Matrix). The Utilities' IRP currently does not provide specific site information that would indicate where DG could have the greatest economic benefit to the electric system. The Commission should direct the Utilities to provide such information in their IRP documents and make this information publicly available (see for example Item 3)(A)3. of the DG Matrix).

Q. HOW DOES THE INCORPORATION OF DG IN THE DEVELOPMENT OF THE IRP PROCESS CREATE A LEVEL PLAYING FIELD FOR THIRD-PARTY VENDORS, WHILE AT THE SAME TIME ENSURING THE DEPLOYMENT OF COST-EFFECTIVE DG?

A. The Utilities must be required to perform analysis in the IRP process which identifies the potential benefit of DG at specific customer locations, areas and types of areas on the utility's T&D system to the extent practical (see Item 3)(A)3. of the DG Matrix). Only the utility has all of the information available to perform such a T&D system analysis and can thus perceive the potential benefits of DG on their T&D system. If the analysis were performed in the development of the IRP plan, the location information could become available to third-party vendors. Once the locations are identified, third-party vendors can approach customers in the areas to install customer-sited DG, or participate in the offering of the DG equipment to the utility, for the utility's installation, operation and maintenance at the customer site.

Q. DOES THE EXISTING IRP FRAMEWORK NEED TO BE REVISED TO INCORPORATE CONSIDERATION OF DG IN THE IRP PROCESS?

A. No revision to the Framework is required. The types of DG that should be included in the five-year action plan should be those that are commercially viable at the time that the plan is developed, and considered to be suitable for use in Hawaii. As mentioned previously in my testimony, the Utilities need to

include information in their IRPs that identify cost-effective locations for DG projects on the electric system.

It is important to note that the IRP process must be on-going to be utilized as an effective planning tool. Thus, new technologies that become commercially viable after the Plan is developed can be incorporated in the development of the next IRP so as not to interrupt the implementation of the five-year action plan in the Commission approved IRP. In this regard, the Commission approved five-year action plan should not be modified to the extent practical. The timing of events set forth in the plan, however, may be subject to change depending on how well the actual sales and load match the forecasted levels upon which the plan was developed.

In addition, the IRP plan must set forth the quantified goals and objectives that are intended to be achieved with the action plan, the measures by which one will be able to assess the achievement of each goal and objective, and the time line for achieving these goals and objectives. This must be done at the inception of the planning process to allow for an effective assessment of the alternatives under consideration in developing the five-year action plan.

D. IMPLEMENTING COST-EFFECTIVE CUSTOMER-SITED DG IDENTIFIED IN THE UTILITIES IRP SHOULD BE DONE THROUGH A COMPETITIVE PROCESS.

Q. PLEASE DESCRIBE THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE PARTIES' CONCERNS REGARDING DG AND THE COMPETITIVE PROCESS.

A. Although HECO and KIUC did not address a competitive process for the Utilities' procurement of DG in their direct testimonies, the Utilities agree the Commission should, in this proceeding, require consideration of a competitive procurement process for utility-owned DG (see Item 3)(B)3. of the DG Matrix). As previously mentioned, the Commission has initiated a proceeding to investigate a competitive bidding process for all new generating resources (i.e., Docket No. 03-0372).

COM believes that customer-sited DG should be provided by competitors, not by the Utilities (see COM-T-2, pages 19-25).

HREA believes that the Utility would facilitate the implementation of DG by issuing DG RFPs to both DG providers and potential DG customers; and the Utilities would recommend selections for implementation pending Commission approval (see HREA's Direct Testimony, page 12).

HESS, while not directly commenting on competitive bidding, indicates the Commission should insure that rate payers have options to best meet their need for reliable power at a fair price (see HESS-T-1, page 2).

LOL recommends the Utilities separate into two companies and that the generating company competes with other potential DG providers (see LOL Preliminary Statement of Position, page 22).

Q. IS A COMPETITIVE PROCESS NEEDED TO IMPLEMENT COST-EFFECTIVE DG PURSUANT TO THE UTILITIES' IRP?

A. Yes. If the generating output of the DG is intended to be sold to, and utilized by, the electric utility with its other generating resources for servicing its retail customers, such DG projects should be acquired through a competitive procurement process. If a customer-sited DG is installed for use to electrically serve the DG customer, then the customer makes its own economic decision by comparing the cost of the DG facility to the unbundled rates that would be implemented in conjunction with DG. Thus, the competitive procurement process will be extremely important in assuring that all generation, including DG, is implemented within the framework of a lowest, reasonable cost IRP.

Q. WOULD THIS COMPETITIVE PROCUREMENT PROCESS ESSENTIALLY INVOLVE COMPETITIVE BIDDING?

A. Competitive bidding is the most common form of a competitive procurement process. Given that DG for the instant proceeding consists of "small" generating facilities, however, the process established for competitive procurement should not be so burdensome so as to outweigh the benefits

from such a process. Accordingly, rather than specifically defining DG competition as requiring a competitive bidding program, the Commission's policy setting decision in this proceeding should indicate that the Utility's procurement of generating resources should be done through a fair and open competitive process. The appropriateness of implementing a competitive bidding process for new generation is to be addressed in another Commission docket (i.e., Docket No. 03-0372).

Q. HOW CAN THAT BE ACCOMPLISHED?

A. Through the use of the Utilities' IRP process, the cost-effectiveness of DG resources will be assessed in developing the Utilities' resource plan to arrive at the lowest, reasonable cost for providing reliable service. Thus, the recommendation in Item 3)(A)1. and Item 3)(B)2. of the DG Matrix requiring consideration of DG in the Utilities' IRP cycle and implementation plans. With respect to implementation of the Utilities' IRP plan, Item 3)(B)3. of the DG Matrix recommends that the Commission require each utility to consider a competitive procurement process for utility-owned DG. The recommendations set forth in Item 3) of the DG Matrix and summarized above are needed to achieve the above end results.

As mentioned in my direct testimony, the Consumer Advocate is required to consider the long-term benefits of renewable resources.[6] Therefore, the rules and regulations governing the deployment of DG projects must properly recognize the benefits, impacts and costs of DG in a manner that is consistent with state, energy and environmental policies, while minimizing uncertainty and risk between the electric utility companies, their rate payers, and DG suppliers and their customers. If DG is successfully implemented, electric costs should be lower, but in no event any greater, than otherwise would have occurred absent DG. Likewise, reliability should be improved, and not degraded, because of DG implementation.

Q. HOW IS IT THAT THOSE RECOMMENDATIONS ACHIEVE THE RESULTS DESCRIBED IN THE ANSWER TO THE QUESTION ABOVE?

A. As previously stated, the benefit or impact of DG should be evaluated against the lowest, reasonable cost option of the Utilities' IRP plan that meets the needs of customers in a manner that complies with state, energy and environmental policies. Thus, the recommendations described earlier regarding the Utilities' evaluation of DG in its IRP cycle and implementation plans (see Item 3)(A)1. and Item 3)(B)2. of the DG Matrix). With respect to uncertainty and risk, there are a number of items that related to power quality

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[6] See HRS §269-54(c).

and reliability that must be considered. These items are addressed in Item 5) of the DG Matrix. Item 5) of the DG Matrix includes recommendations to avoid DG from having an adverse impact on power quality and reliability. Item 5) of the DG Matrix also notes that the impact DG has on reliability relates to whether the DG is owned or operated by the Utility (see CA-T-1, page 69 through 71 for more details) and is dependent on location specific issues. As noted in Item 5)(C) of the DG Matrix the above recommendations would result in DG being implemented to improve reliability and to take into account the operational features between DG technologies.

Q. HOW DOES THE CONSUMER ADVOCATE'S RECOMMENDATION THAT UTILITIES BE REQUIRED TO CONSIDER A COMPETITIVE PROCUREMENT PROCESS FOR UTILITY-OWNED DG ADDRESS THE LEVEL-PLAYING FIELD CONCERNS RAISED BY THE PARTIES?

A. First, it needs to be reiterated that DG must be considered in the Utility's IRP cycle and implementation plan to develop the lowest, reasonable cost plan for the utility to meet the needs of its customers.

Second, the IRP plan should provide information that not only identifies the benefits, but also the geographic locations at which DG would be of greatest value to all parties as indicated in my direct testimony. The IRP review and evaluation should include specific T&D analysis during the IRP review that identified locations where DG could be most beneficial to the

electric system. To the extent practical, potential customers within the area could be identified as well. This sharing of information addresses part of the "level playing field" concern raised by the Non-Utility Parties. Accordingly, the DG Matrix includes the recommendation that the utility should identify specific areas or types of areas where DG is needed or could be most beneficial to the extent practical (see Item 3)(A)3. of the DG Matrix).

Third, the competitive procurement process provides the opportunity for parties to offer alternative lowest reasonable cost options for the implementation of the utility's IRP plan.

E. INTERCONNECTION STANDARDS AND AGREEMENTS.

Q. WHAT IS THE CONSUMER ADVOCATE'S UNDERSTANDING OF THE PARTIES' CONCERNS REGARDING INTERCONNECTION STANDARDS AND AGREEMENTS?

A. HECO already has Commission approved interconnection standards and agreements (see HECO-T-4, pages 25-29). These requirements set forth the situations by which the Company is to respond to third parties and the nature and scope of impact studies that are needed on a case by case basis.

KIUC points to a number of industry standards regarding interconnection requirements but does not at this time have an interconnection standard or agreement in place (see KIUC-T-2, pages 27-29).

COM recommends that reasonable interconnection standards and procedures of DG systems be adopted by the Commission (see COM-T-1, page 15 and COM-T-2, pages 99-100).

HESS has a number of specific changes to HECO's interconnection standards and agreement procedures and time limits which it believes should be used to update HECO's Rule 14 (see HESS-T-1, page 3 and HESS-T-2, pages 4-5).

HREA addresses interconnection standards and agreements in its Preliminary Statement of Position at pages 12-13.

LOL addresses its implementation on this issue at page 24 of its Preliminary Statement of Position.

Q. WHY MUST AN INTERCONNECTION AGREEMENT AND INTERCONNECTION STANDARDS BE DEVELOPED AS RECOMMENDED BY THE CONSUMER ADVOCATE?

A. The Utility is a party to interconnection agreements when a DG project is requested and thus would know about a competitor's activities. The Utility could intentionally "slow down" this interconnection process and then pursue the customer itself. This is an example that highlights the concerns expressed for the need for "firewalls" and interconnection application procedures that must be followed to prevent the Utility from having an unfair advantage.

Q. WHAT MUST BE CONSIDERED TO ALLOW A DG FACILITY TO INTERCONNECT WITH THE ELECTRIC UTILITY GRID?

A. As indicated in my direct testimony, the following requirements must be considered to allow a facility to interconnect with the electric utility grid.

1. The need to maintain safety, reliability, power quality and safe restoration of service;
2. The need to protect the utility's equipment and the customer's equipment and facilities; and
3. The need to avoid any adverse impact on the operating efficiencies of the utility's system due to the interconnection of the customer-sited DG to the utility grid.

In general, the physical interconnection takes into account design, operating and technology specific requirements involving protection, synchronizing and control equipment. All DG facilities need to meet these requirements and should be subject to the same technical review and conform to the Utility's interconnection agreements and requirements. Having such standards in place provides a streamlined, and perhaps less time consuming, process for connecting customer-sited DG to the electric utility infrastructure.

Q. WILL INTERCONNECTION REQUIREMENTS AND AGREEMENTS NEED TO BE DEVELOPED BY THE UTILITIES TO IMPLEMENT DG?

A. No. As stated earlier, HECO has Commission approved standardized physical interconnection requirements and a standardized interconnection agreement for DG. The Commission's DG policy setting decisions in this proceeding, however, should include directions that those interconnection standards and agreements be periodically reviewed and updated, particularly to incorporate those items addressed by HESS in its direct testimonies. KIUC, on the other hand, should be required to develop interconnection standards and agreements. In addition, KIUC should be subjected to the same requirements for periodic review and update, as necessary.

As discussed, certain interconnection requirements and standards and unbundled rates should be put in place so as to avoid adverse safety, reliability and efficiency impacts of customer and third-party owned and/or operated DG projects. In addition, I believe it is important to recognize the differences in risk and/or benefits that relate to the ownership structure and the operational capabilities and features of the DG projects and the owner and operator of such projects as described in my direct testimony (see CA-T-1, pages 69-78). Even though DG projects on the Islands are defined in my testimony to be 12 MW or less (depending on the Island system) it is important to note that even a number of small projects can become a significant amount of capacity, especially if concentrated in a location of the Utilities' system, that

the Utilities may rely on for reliability. If these projects are expected to be available or in operation and then they are not adequately maintained and operated, the Utilities will be faced with lesser reliability (greater number of outages) and increased costs if more Utility generation must be installed to counteract unreliable DG capacity.

F. THE COMMISSION SHOULD DEVELOP RULES AND REPORTING REQUIREMENTS TO PREVENT CROSS-SUBSIDIZATION OF UTILITY-OWNED DG.

Q. WHAT OTHER RULES SHOULD BE IMPLEMENTED BY THE COMMISSION TO CREATE A LEVEL PLAYING FIELD IF UTILITIES ARE ALLOWED TO OWN AND OPERATE CUSTOMER-SITED DG?

A. The Commission's policies from this proceeding should set forth a framework that includes a requirement for utilities that intend to provide customer-sited DG services to establish accounting mechanisms that will properly identify the costs and revenues of providing DG services. This would entail the establishment of separate activity codes to account for the Utility's cost of installing customer-sited DG projects and the operating costs and revenues associated with such installations. In addition, internal company cost allocation procedures should be established to allow for an independent review of the allocation of common costs to DG projects in order to ensure that cross-subsidization of the DG service is not occurring. These cost allocation manuals should be subject to the review and approval of the Commission.

The above items and the financial records should be available for review and subject to verification by the regulatory agencies so as to ensure that revenue from electric customers does not subsidize the DG services.

In addition, the Commission should require Utilities to treat customers with utility-owned DG the same as customers with Non-Utility owned DG in terms of rates, charges and utility services.

The intent of this approach is several-fold. First, if Utilities sell DG projects to customers, the employees and equipment, overheads and facilities should not be funded from non-DG electric rates. These expenditures should be borne by the DG operations. This would ensure that non-DG customers do not pay for customer-owned DG facilities and that rates would continue to be applied fairly and equitably. In addition, if the Utility DG operations is in any way subsidized by the non-DG electric Utility operations through discounts or employees who perform the DG installation and maintenance but are paid by the Utility company without the appropriate cost allocation, the DG operations would theoretically be able to install DG projects at a lower cost than other third-party vendors. The Utility's DG operations and the costs associated with the installation and maintenance of the DG system should be subject to the approval of the Commission to ensure that revenue from non-DG electric customers does not subsidize utility-owned DG customers.

Finally, the Commission should require Utilities to submit, for Commission review and approval, applications to install customer-sited DG.

This requirement will provide an opportunity for interested parties to express their specific concerns with the Utilities' application to the Commission.

As indicated in Item 2)(B) of the DG Matrix and explained in greater detail in my rebuttal testimony, Utilities should be permitted to participate in customer-sited DG projects provided that such participation is in a manner that is not unduly nor unreasonably preferential, discriminatory or anti-competitive. Thus, if the Commission determines that the Utilities should be allowed to own customer-sited DG, the Commission will need to provide specific guidance to ensure that a "level playing field" exists for all DG providers, consistent with the recommendations set forth in this section of my rebuttal testimony.

IV. DG ISSUE MATRIX.

Q. WHAT IS THE PURPOSE OF EXHIBIT CA-RT-100?

A. Exhibit CA-RT-100 is a matrix that, based on my reading and understanding of the direct testimonies filed in this proceeding, identifies the matters that need to be considered by the Commission in the context of each of the issues raised by the Commission in its Pre-hearing Order. The Consumer Advocate's position on each of the items is identified on Exhibit CA-RT-100. The assumptions regarding certain DG definitions is also included as part of the first issue in Exhibit CA-RT-100 (see Item 1)(A) of the DG Matrix).

Q. WHAT IS THE STATUS OF THE CONSUMER ADVOCATE'S DISCUSSIONS WITH THE OTHER PARTIES?

A. It is my understanding that the Consumer Advocate has met individually with KIUC and HECO, but has not had the opportunity to meet with all of the Parties to this point. Accordingly, only those items reflecting the Consumer Advocate's, KIUC's, and HECO's positions are reflected in Exhibit CA-RT-100 at this time. It is my understanding that the Consumer Advocate is willing to continue discussing the matrix with the remaining Parties for purposes of resolving the differences on the DG issues. Accordingly, Exhibit CA-RT-100 may be updated prior to the hearing in this proceeding.

V. SUMMARY.

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. As indicated in my direct testimony, DG affects nearly all issues that are normally the responsibility of the electric utility subject to the approval of the Commission. These issues include the electric utility's generation, T&D system operations and costs, customer electric rates, service reliability and the IRP used to plan the utility system. The critical issues for Hawaii's Utilities are the impact Non-Utility owned DG can have on the Utilities' ability to reliably serve customers, the Utilities' costs and the amount of revenue collected by the Utilities from its customers (both DG and non-DG customers). The critical issues for Non-Utility DG participants is assurance of a "level playing field"

where information, DG-related rates and charges, and interconnection requirements are provided in a manner that does not cause the Utilities to have an unfair competitive advantage.

The Consumer Advocate's objectives are to insure that the policies and framework established in the instant proceeding promote the deployment of DG projects representing the lowest reasonable cost alternative to meeting Hawaii's energy needs and policies, while insuring the provision of reliable service to electric utility customers. The Consumer Advocate contends that the rules and regulations governing the deployment of DG projects must properly recognize the benefits, impacts and costs of DG in a manner that is consistent with State energy and environmental policies, while minimizing uncertainty and risk among the Utilities, their rate payers, and third-party DG vendors and their customers.

To effectively deploy DG on each of the islands, it is recommended the Commission establish policies from this proceeding by providing a framework that sets forth the following:

1. the need to develop cost of service information and tariffs that would effectively unbundle the existing rates (i.e., rate design) (see Section III.B. and DG Matrix Item 10));
2. the inclusion of DG in the development of the Utilities' IRP plan for each of the electric systems serving each of the islands to analyze the

cost-effectiveness of DG technologies for Hawaii's energy market (see Section III.C. and DG Matrix Item 11));

3. the need to consider a competitive process for installing cost-effective utility DG projects identified in the Utilities' IRP (see Section III.D. and DG Matrix addressed in parts of Items 3) 4) and 6);

4. the importance of developing interconnection requirements and standards for customer-sited DG interconnection rules and agreements to ensure the timely and safe connection of DG facilities to the electric utility grid in a manner that does not compromise the utility's ability to provide reliable service, nor discourage third-party vendors participation in Hawaii's DG market (see Section III.E. and DG Matrix Item 9)); and

5. the need to develop rules and reporting requirements to ensure that costs of providing utility customer-sited DG are not being subsidized by the Utilities' non-DG customers (see Section III.F.).

If DG is successfully implemented, electric costs should be lower, but in no event any greater, than otherwise would have occurred absent DG. Likewise, reliability should be improved, and not degraded, because of DG implementation.

Q. WHY SHOULD THE COMMISSION CONSIDER THE CONSUMER ADVOCATE'S RECOMMENDATIONS?

A. First, the Consumer Advocate has no special self-interest in a result-oriented outcome to itself as a provider of DG in this proceeding. Thus, the Consumer Advocate offers an independent and objective review to this generic, policy setting proceeding. Second, the Consumer Advocate's objectives are to insure that the policies and framework established in the instant proceeding promote the deployment of DG projects representing the lowest, reasonable cost alternative to meeting Hawaii's energy needs and policies, while insuring the provision of reliable service to electric utility customers.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes. It does.

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
Planning Issues				
1) What forms of distributed generation (e.g., renewable energy facilities, hybrid renewable energy systems, generation, cogeneration) are feasible and viable for Hawaii?				
(A) DG Definition - DG involves use of small scale electric generating facilities located at or near the load.				
1. "Small" is relative to utility system loads and to the loads of large customers, and the location on the utility's grid. The following generally sets forth the range of values for establishing the upper size limit of a generating facility to be considered as DG (1-2 MW for Hawaii, 6-12 MW for Oahu, 1-2 MW for Maui, up to 1 MW for Lanai and Molokai, 1-2 MW for Kauai).	CA KIUC HECO			* KIUC has no position regarding the magnitude estimates for Hawaii, Oahu, Maui, Lanai and Molokai
2. For purposes of this proceeding, DG is limited to "generating" supply-side resources and does not include DSM	CA KIUC HECO			
3. Generating units not considered DG for this proceeding include:				
(a) "isolated" generating units serving customers not connected to the utility grid; and	CA KIUC HECO			
(b) "emergency" generating units that serve customer load only during period of utility outages, and that are designed such that they are prevented from paralleling with the utility system. Emergency generating units that operate to serve customer load in non-emergency situations (i.e., when there is not a utility outage) are no longer emergency generators and will be considered DG.	CA KIUC HECO			
4. DG output is either recognized by the utility with all other resources as serving all electric system load, or associated with specific customers	CA KIUC HECO			
(B) DG Feasible and Viable for Hawaii:				
1. In order for a form of DG to be "feasible and viable for Hawaii", it must be (1) technically feasible, (2) commercially available, (3) economically viable (i.e., cost-effective versus other options), (4) price competitive in the short-term, (5) sustainable in the long-term (i.e., backed up by adequate infrastructure support with respect to O&M and fuel), (6) able to address site-specific constraints (e.g., with respect to permitting) and (7) able to meet the perceived needs of customers. For customer-sited DG applications, the decision to install customer sited generation will be made by the customers, thus customers making up this market will determine whether a form of DG is feasible and viable for Hawaii.	CA KIUC HECO			
2. The viability and feasibility of available or planned DG technologies is site specific.	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
3 The viability and feasibility of available or planned DG technologies should be analyzed in context of each utility's IRP, to the extent practicable.	CA KIUC HECO			
2) Who should own and operate distributed generation projects?				
(A) DG projects, whose output is included by the utility with all other resources to serve entire system load, should be owned and operated by:				
1. For Substation-sited DG				
(a) utilities only	CA KIUC HECO			
(b) third party vendors only		CA KIUC HECO		
(c) utilities or third party vendors		CA KIUC HECO		
2. For Customer-sited DG				
(a) customers or third party vendors/equipment lessors only		CA KIUC HECO		
(b) utilities, third party vendors/equipment lessors or customers	CA KIUC HECO			* With KIUC right of first refusal on Kauai.
(B) Utility participation in customer-sited DG projects should be permitted, provided that:				
1. the utility's participation is in a manner that is not unduly or unreasonably preferential, discriminatory or anti-competitive	CA KIUC HECO			
2. the utility's participation is:				
(a) offered as a regulated utility service; or	HECO		CA* KIUC	*CA takes no position on whether it is regulated or unregulated, it could be either, but prefers regulated.

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
(b) offered through an unregulated subsidiary of the utility		HECO	CA* KIUC	*CA takes no position on whether it is regulated or unregulated, it could be either but prefers regulated.
3) What is the role of the regulated electric utility companies and the Commission in the deployment of distributed generation in Hawaii?				
(A) The utilities should				
1. plan for and facilitate deployment of DG through the IRP process by evaluating the cost-effectiveness of DG resources for inclusion in the utilities' resource plan.	CA KIUC HECO			
2. offer CHP systems as a regulated service under circumstances where cost-effective and not burdensome to non-participating customers	HECO		CA** KIUC*	** consistent with the above, CA is not advocating that the CHP systems be offered solely as a regulated service. * KIUC has no current plans to offer CHP systems. KIUC is undecided whether such systems, if so offered by KIUC, should be offered as a regulated or unregulated service. However, KIUC agrees that, if so offered, it should be cost-effective and not burdensome to non-participating customers.
3. identify specific areas or types of areas where DG is needed or could be most beneficial, to the extent practicable.	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
(B) The Commission should:				
1. require each utility to develop and have cost of service information and apply appropriate tariffs that result in a DG customer being served at a cost that is not subsidized by non-DG customers	CA KIUC HECO			
2. require each utility to consider DG in the utility's IRP cycle and implementation plans	CA KIUC HECO			
3. require each utility, to consider a competitive procurement process for utility-owned DG	CA KIUC HECO			
Impact Issues				
4) What impacts, if any, will distributed generation have on Hawaii's electric transmission and distribution systems and market?				
(A) The potential positive impacts of DG are:				
1. increased reliability (see Item 5), defer or avoid T&D upgrades, defer addition of large central generating units, reduce system losses, lowest reasonable rates to customers, provided that	CA KIUC HECO			
(a) DG is planned and implemented in the context of the utility's IRP	CA KIUC HECO			
(b) the utility considers the use of a competitive procurement process for utility-owned DG	CA KIUC HECO			
(c) the utility's rates are such that, on a case-by-case basis, the implementation of DG will not cause the remaining customer base to subsidize DG.	CA KIUC HECO			
(B) The potential negative impacts of DG are:				
1. loss of revenues to cover fixed costs if DG not utility owned	CA KIUC HECO			
5) What are the impacts of distributed generation on power quality and reliability?				
(A) In order to avoid any substantive adverse impact on power quality, the DG must:				
1. be interconnected to the grid in accordance with utility-approved standardized interconnection requirements,	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
2. which requirements should be updated to meet applicable current IEEE standards,	CA KIUC			
3. and meet applicable IEEE standards and be certified by the UL or other certification entities, to the extent practicable.	CA KIUC HECO			
(B) The impact of DG on reliability relates to:				
1. whether the DG is operated or controlled by the utility	CA KIUC HECO			
2. is dependent upon location specific issues	CA KIUC HECO			
(C) If DG is implemented in accordance with applicable standards and interconnection requirements:				
1. reliability should be improved, not degraded, because of the deployment of DG in Hawaii	CA KIUC HECO			
2. differences in operational features between DG technologies (i.e., firm versus as-available) need to be taken into account.	CA KIUC HECO			
6) What utility costs can be avoided by distributed generation?				
(A) Costs that can be deferred or avoided by DG include:				
1. costs associated with new generating units, avoided line losses, and T&D upgrades	CA KIUC HECO			
2. provided that DG is installed in the context of the utility's IRP plan	CA KIUC HECO			
3. and a competitive procurement process is utilized for utility-owned DG	CA KIUC HECO			
(B) The utility costs avoided by DG are dependent on:				
1. the specific nature of the area's T&D system and the ability to site DG there, and	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
2. the number and diversity of installations, their reliability, ability of non-utility owned/operated to coordinate operation and maintenance with the utility, and their sustainability;	CA KIUC HECO			
3. noting, however, that such avoided cost benefits may be offset by the utility's loss of revenue recovery of fixed costs.	CA KIUC HECO			
7) What are the externalities costs and benefits of distributed generation?				
(A) The potential externalities benefits from DG are:				
1. reduction in fossil fuel use and emissions from non-fossil fuel or combined heat and power DG	CA KIUC HECO			
2. conservation of water	CA KIUC HECO			
3. energy security	CA KIUC HECO			
4. ability to match load growth with new DG rather than large increments of central station power	CA KIUC HECO			
5. ability to meet specific customer needs with smaller resources	CA KIUC HECO			
6. the ability of DG to switch quickly to new technology compared to large generating units	CA KIUC HECO			
7. the ability to improve reliability	CA KIUC HECO			
(B) The potential externalities costs that can result from DG include:				
1. loss of economy of scale of large generating units	CA KIUC HECO			
2. increased fuel use and emission from less efficient fossil fuel DG	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
3. air emissions, noise and visual impact of DG located in close proximity to customers	CA KIUC HECO			
4. performance and safety risks of DG not under utility ownership, operation and control	CA KIUC HECO			
(C) Externalities costs and benefits:				
1. should be considered as an integral part of the analysis conducted of DG,	CA KIUC HECO			
2. DG should be subject to the same scrutiny, analysis and quantification as would any other supply-side resource or DSM measure,	CA KIUC HECO			
3. should be evaluated in the utility's IRP planning process.	CA KIUC HECO			
8) What is the potential for distributed generation to reduce the use of fossil fuels?				
(A) Depending on the type of DG technology and site-specific factors, DG can reduce the use of fossil fuels in a number of ways:				
1. Certain types of DG technology rely on renewable resources to generate energy (e.g., solar energy (photovoltaics), wind turbines and hydro).	CA KIUC HECO			
2. DG in most cases will reduce delivery system losses	CA KIUC HECO			
3. DG that also serves thermal load, such as CHP facilities, can do so at an overall higher efficiency resulting in a reduction of fossil fuel use	CA KIUC HECO			
Implementation Issues				
9) What must be considered to allow a distributed generating facility to interconnect with the electric utility's grid?				
(A) A number of factors may be considered in making the determination, including the:				
1. party that will own the facility;	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
2. party that will operate the facility;	CA KIUC HECO			
3. current industry DG design, installation and operation practices, and whether the facility will meet or exceed those practices.	CA KIUC HECO			
4. utility interconnection and operational requirements and whether the facility will meet or exceed those requirements	CA KIUC HECO			
5. applicable National Electric Code (NEC), Institute of Electrical and Electronic Engineers (IEEE) standards, and American National Standards Institute (ANSI) standards, and whether the facility will meet those standards;	CA KIUC HECO			
6. approval of applicable certification entities, such as the Underwriters Laboratory (UL), for the facility and its subsystems and components; and	CA KIUC HECO			
7. compliance with State and site-specific siting approvals and building and fire safety codes.	CA KIUC HECO			
(B) Each utility should have Commission approved interconnect standards and agreements to qualify or approve DG facilities for interconnection with the utility's grid.	CA KIUC* HECO			* KIUC is in the process of developing these standards
(C) The ownership structure of the utility (cooperative versus investor-owned) must be taken into account	CA KIUC		HECO	
10) What is the appropriate rate design and cost allocation issues that must be considered with the deployment of distributed generation facilities?				
(A) Cost Allocation Issues				
1. The cost of service (i.e., T&D, ancillary services, etc.) provided to DG customers would be identified and quantified in a cost of service study for each utility	CA KIUC HECO			
2. The level of effort and detail for the cost of service study should be balanced with the information available, the cost of developing additional data, and the magnitude of the DG market and its impact on the utility's revenue recovery and revenue stability.	CA KIUC HECO			

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

		Agree	Disagree	No Position	Comments
(B)	Rate Design Issues				
1.	Intra and inter class subsidies between customers in a rate class and between rate classes cause loss of revenue issues and an adverse impact on the remaining customers' rates.	CA KIUC HECO			
2.	A tiered-rate system (where increasing levels of usage are billed at higher rates), combined with a low customer charge, could be implemented to encourage DG.		HECO	CA KIUC	
(C)	Existing utility bundled rates				
1.	should be supported by a cost of service study such that DG customers compensate the utility for the costs of services provided;	CA KIUC HECO			
11) What revisions should be made to the integrated resource planning process?					
(A)	DG must be included in each utility's IRP cycle and implementation plans				
1.	No changes to the IRP Framework are required for the consideration of DG.	CA KIUC HECO			
2.	An individual DG project is also generally too small to impact the timing of central station units or transmission line timing. In order to complete a fair evaluation, an aggregate forecast of DG resources must be considered.	CA KIUC HECO			
(B)	The types of DG to be included in the five-year action plan:				
1.	are those that are commercially viable at the time that the plan is developed, and considered to be suitable for use in Hawaii,	CA KIUC HECO			
2.	new technologies can be incorporated in the development of the utility's next IRP so as not to interrupt the implementation of the five-year action plan in the Commission approved IRP.	CA KIUC HECO			
12) What revisions should be made to state administrative rules and utility rules and practices to facilitate the successful deployment of distributed generation?					
(A)	Revisions to the following existing administrative rules may be required:				
1.	HAR6-61-Rules of Practice and Procedure before the Public Utility Commission;			CA KIUC HECO	
2.	HAR6-74-Standards for Small Power Producers and Cogeneration; and			CA KIUC HECO	

Comparison of the Consumer Advocate's, KIUC's and HECO's Positions on Distributed Generation (DG) Issues

	Agree	Disagree	No Position	Comments
3. Title VII, General Order No. 7, Standards for Electric Utility Service in the State of Hawaii.			CA KIUC HECO	
4. It may be appropriate to develop a specific administrative rule for DG.			CA KIUC HECO	
(B) The Commission should				
1. approve the HECO Utilities' proposed CHP program and CHP tariff, and expeditiously review and	HECO		CA* KIUC	*CA takes no position because the matter is to be decided in Docket No. 03-0366
2. approve applications for individual CHP projects under Rule 4 of the HECO Companies' tariffs.	HECO		CA* KIUC	*CA takes no position because the matter is to be decided in Docket No. 03-0366
(C) In order for the utilities to participate in customer-sited DG, the review and approval processes need to be streamlined.				
1. Standard form contracts should be adopted	CA KIUC HECO			
2. Tariff structures for DG should be implemented	CA KIUC HECO			
3. The process of demonstrating rate payer benefits should be standardized for each utility, taking into consideration, among other things, the ownership structure of the utility (cooperative vs. investor-owned)	CA KIUC HECO			
(D) Fuel cost recovery methodologies:				
1. should be revised to accommodate DG.	CA KIUC HECO			

Utility Services Provided to Customer Under Various Customer-Sited Distributed Generation Scenarios

Scenarios	From Utility to Customer						From Customer to Utility			
	Supply Services			Delivery Services						
	Full-Requirements Service	Partial Requirements Service								
		Backup Services	Supplemental Service	T & D Services	Indirect Services[1]	Ancillary Services[2]	Purchased Energy	Capacity Credit	Dispatch Control	Locational Credit[4]
Non-DG Customers										
1 Customers that receive all services from the utility	√	N/A	N/A	√	√	√	N/A	N/A	N/A	N/A
DG Customers										
2 DG normally serves a portion of customer's load	N/A	√	√	√	√	√	N/A	N/A	N/A	?
3 DG normally serves all of customer's load with excess sold to utility	N/A	√	N/A	√	√	√	√	?	?	?
4 All of DG output sold to utility, entire customer load served/billed by utility	√	N/A	N/A	√	√	√	√	?	?	?

[1] Indirect Services include accounting, A&G, etc.

[2] Ancillary Services include regulation and frequency control, voltage support, etc. and are generally the most difficult of the services to identify and quantify.

[3] Capacity credit and dispatch control dependent on type of resource and its ability to serve utility loads when needed by the utility.

[4] Recognizes value of customer-sited DG located on constrained areas of the utility's system.